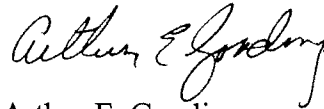## REMARKS

The Office Action dated July 11, 2006 has been received and carefully reviewed. It is submitted that by this response all bases of rejection and objection are traversed. Upon entry of this response, Claims 1-11 remain in the application. Claims 1 and 2 have been amended. Reconsideration is respectfully requested.

Claims 1-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sharman et al. (British patent 909,865) in view of either Nystrom et al. (U.S. 6,299,852) or Bertsch-Frank et al. (U.S. 6,117,409). Claims 1 and 2 have been amended to include the limitation of rapid mixing wherein the characteristic time of mixing is less than the characteristic time of reaction. Support for this can be found in paragraphs 13 and 21 of the specification. The rapid mixing is achieved by mixing thin layers of fluids in a small chamber to reduce the characteristic mixing time such that the ratio of characteristic mixing time to characteristic reaction time is less than 1, and where the characteristic mixing time is proportional to the square of the mixing distance divided by the diffusion coefficient. The Sharman et al. reference is for large scale mixers, and has a mixing chamber 4.5 feet in diameter. This creates a relatively large characteristic mixing time and would provide for a ratio of characteristic mixing time to characteristic reaction time greater than 1. By limiting the chamber size and mixing narrow streams of liquids to keep the characteristic mixing time low, the process overcomes potential hazards during mixing of potential explosive mixtures and allows for the mixing and reacting of chemicals within their flammability envelope. The Nystrom et al. or Bertsch-Frank et al. references teach the reacting of hydrogen and oxygen over a catalyst to form hydrogen peroxide. However, Nystrom et al. state that the reaction must keep the hydrogen concentration below the detonation limit of 15 mol% (Col 2, ln 66 – col 3, ln 2) and preferably below 5 mol % to stay outside the combustion envelope. Likewise Bertsch-Frank deals with the combustion envelope issue by requiring the gas be saturated or supersaturated with water vapor (or a fog) to prevent any overheating. This is a limitation not present in the present, also, keeping the mixture below the combustion limit. (Col 2, lns 30-35, lns 47-50, and lns 64-66). The reaction is also limited to a hydrogen concentration of less than 6 mol % to keep

the mixture outside the combustion envelope (col 3, lns 22-25). The present invention provides for reaction hydrogen and oxygen with molar ratios of 1:1, and without adding a diluent. This produces much higher yields of hydrogen peroxide in a safe manner, without requiring significant dilution of the gases to bring the process into a safe operation regime. Neither Nystrom et al. nor Bertsch-Frank et al. teach the limitation for a safe reaction operation by having the ratio of characteristic mixing time to characteristic reaction time less than 1, and therefore do not provide this missing element. It is therefore submitted that the amended Claims 1 and 2 are not anticipated, taught, or rendered obvious by the references. Claims 3-11 depend from Claim 2 and it is submitted that through this dependence, Claims 3-11 are not anticipated, taught, or rendered obvious by the references.

In summary, Claims 1-11 remain in the application. Claims 1 and 2 have been amended. Remarks have been made pointing out the differences between the present invention and the prior art references traversing all of the Examiner's rejections. Accordingly in view of the remarks, applicants assert that Claims 1-11 meet all statutory requirements and respectfully request allowance of all pending claims. If the Examiner believes it would expedite prosecution of the above identified application he is cordially invited to contact applicants' attorney at the below listed telephone number.

Respectfully submitted,

Arthur E. Gooding
Attorney for Applicants
Reg. No. 50,513
(847) 391-1520 (phone)
(847) 391-2387 (fax)

AEG/mml